

Claims

- [c1] 1. A pump comprising:
- a pump housing defining a tube set receiving portion constructed to receive a length of tube therein;
- a blade having a leading portion having a length and a width, said length being greater than said width, said length being between about 2 cm and about 12 cm, said leading portion constructed to engage, along said length and width thereof, a length of tube disposed in said tube set receiving portion, said blade mounted for reciprocating movement between a first position and a second position, said leading portion of said blade configured to compress along its length a length of tube disposed in said tube set receiving portion when said blade is in said first position, said leading portion of said blade configured not to compress a length of tube disposed in said tube set receiving portion when said blade is in said second position; and
- a reciprocator constructed to move said blade between said first position and said second position.
- [c2] 2. A pump in accordance with Claim 1 , further comprising a first occlusion member constructed to compress a tube disposed in said tube set receiving portion at a position upstream of said blade, said first occlusion member mounted for reciprocating movement between a first position and a second position, said first occlusion member permitting flow through a tube disposed in said tube set receiving portion when said first occlusion member is in said second position, and said first occlusion member compressing a tube disposed in said tube set receiving portion when said first valve member is in said second position.
- [c3] 3. A pump in accordance with Claim 1 , further comprising a second occlusion member constructed to compress a tube disposed in said tube set receiving portion at a position downstream of said blade, said second occlusion member mounted for reciprocating movement between a first position and a second position, said second occlusion member permitting flow through a tube disposed in said tube set receiving portion when said second occlusion member is in said second position, and said second occlusion member compressing a

tube disposed in said tube set receiving portion when said second occlusion member is in said first position.

[c4] 4. A pump in accordance with Claim 3 further comprising a first occlusion member constructed to compress a tube disposed in said tube set receiving portion at a position upstream of said blade, said first occlusion member mounted for reciprocating movement between a first position and a second position, said first occlusion member permitting flow through a tube disposed in said tube set receiving portion when said second occlusion member is in said second position, and said first occlusion member compressing a tube disposed in said tube set receiving portion when said first occlusion member is in said first position, said pump still further comprising a second occlusion member constructed to compress a tube disposed in said tube set receiving portion at a position downstream of said blade, said second occlusion member mounted for reciprocating movement between a first position and a second position, said second occlusion member permitting flow through a tube disposed in said tube set receiving portion when said second occlusion member is in said second position, and said second occlusion member compressing a tube disposed in said tube set receiving portion when said second occlusion member is in said first position, and wherein said reciprocator is constructed to move said first occlusion member between said first and second positions thereof, and wherein said reciprocator is constructed to move said second occlusion member between said first and second positions thereof.

[c5] 5. A pump in accordance with Claim 4 , wherein said reciprocator is constructed to move said blade from said second position thereof to said first position thereof when said second occlusion member is in said second position thereof.

[c6] 6. A pumping mechanism in accordance with Claim 4 , wherein said reciprocator is constructed to move said blade from said second position thereof to said first position thereof when said first occlusion member is in said second position thereof.

[c7] 7. A pump in accordance with Claim 1 , wherein said tube set receiving portion defines an engagement surface constructed to engage a portion of an exterior

surface of a length of tube disposed in said tube set receiving portion, said engagement surface constructed to inhibit movement of a length of tube disposed in said tube set receiving portion when said blade is moved from said second position to said first position.

[c8] 8. A pump in accordance with Claim 7 , wherein said engagement surface defined by said tube set receiving portion is arcuate in cross-section, and wherein said engagement surface is constructed to engage at least 120 ° of a circumferential exterior surface of a length of tube disposed in said tube set receiving portion.

[c9] 9. A pump in accordance with Claim 1 , wherein said tube set receiving portion is constructed to releasably engage a base associated with a length of tube disposed in said tube set receiving portion.

[c10] 10. A pump in accordance with Claim 1 , wherein said tube set receiving portion defines an aperture therethrough, said aperture defined by said tube set receiving portion configured to permit a slide clamp associated with a length of tube disposed in said tube set receiving portion to slide therethrough.

[c11] 11. A pump comprising:
a pump housing defining a tube set receiving portion constructed to receive a length of tube therein;
a blade having a leading portion having a length and a width, said length being greater than said width, said length being between about 2 cm and about 12 cm, said leading portion constructed to engage, along said length and width thereof, a length of tube disposed in said tube set receiving portion, said blade mounted for reciprocating movement between a first position and a second position, said leading portion of said blade configured to compress along its length a length of tube disposed in said tube set receiving portion when said blade is in said first position, said leading portion of said blade configured not to compress a length of tube disposed in said tube set receiving portion when said blade is in said second position;
a first occlusion member constructed to compress a tube disposed in said tube set receiving portion at a position upstream of said blade, said first occlusion

member mounted for reciprocating movement between a first position and a second position, said first occlusion member permitting flow through a tube disposed in said tube set receiving portion when said second occlusion member is in said second position, and said first occlusion member compressing a tube disposed in said tube set receiving portion when said first occlusion member is in said first position;

a second occlusion member constructed to compress a tube disposed in said tube set receiving portion at a position downstream of said blade, said second occlusion member mounted for reciprocating movement between a first position and a second position, said second occlusion member permitting flow through a tube disposed in said tube set receiving portion when said second occlusion member is in said second position, and said second occlusion member compressing a tube disposed in said tube set receiving portion when said second occlusion member is in said first position; and

a reciprocator constructed to move selectively said blade, said first occlusion member, and said occlusion member between said first positions and said second positions thereof;

wherein said tube set receiving portion defines an engagement surface constructed to engage a portion of an exterior surface of a length of tube disposed in said tube set receiving portion, said engagement surface constructed to inhibit movement of a length of tube disposed in said tube set receiving portion when said blade is moved from said second position to said first position.

[c12]

12. A pump in accordance with Claim 11 , wherein said engagement surface defined by said tube set receiving portion is arcuate in cross-section, and wherein said engagement surface is constructed to engage at least 120 ° of a circumferential exterior surface of a length of tube disposed in said tube set receiving portion.

[c13]

13. A peristaltic pump comprising:

a pump housing defining a part of a tube set receiving portion;

said tube set receiving portion further comprising a door adapted to be

attached to said pump housing, said door having an interior surface normally

directed toward said pump housing;
one of said pump housing and said interior surface of said door having a tube set receiving cavity formed therein;
a tube set comprising a base having a hole therethrough, an elongated tube slidably extending through said base, and a slide clamp slidably mounted in said hole through said base and constructed to selectively occlude said tube; interlocking means on said base and one of said pump housing and said door for slidably and releasably retaining said tube set on one of said pump housing and said door; and
said slide clamp being movable between a first position wherein said tube is occluded by said slide clamp and a second position wherein said tube is substantially unoccluded by said slide clamp.

- [c14] 14. A pump in accordance with Claim 13 , wherein said door has an aperture formed therethrough so as to communicate with said cavity and receive a first end of said slide clamp such that removal of said tube set from said tube set receiving portion is prevented when said slide clamp protrudes into said aperture.
- [c15] 15. A pump in accordance with Claim 14 , wherein said interior surface of said door includes an oblong recess formed therein for receiving said first end of said slide clamp and surrounding said aperture.
- [c16] 16. A pump in accordance with Claim 13 , wherein said interlocking means comprises at least one tab member.
- [c17] 17. A pump in accordance with Claim 16 , wherein said at least one tab member is formed on said base.
- [c18] 18. A pump in accordance with Claim 13 , wherein said interlocking means comprises at least one slot in one of said pump housing and said door.
- [c19] 19. A pump in accordance with Claim 18 , wherein said at least one slot is formed in said door, said at least one slot being generally L-shaped with a first portion extending substantially parallel to said hole in said base and a second portion extending transverse to said first portion of said slot.

20. A pump in accordance with Claim 13 , wherein said pump housing includes a recess formed therein for receiving a second end of said slide clamp.